T I S CALCULATION PROGRAM

IN THIS APPENDIX

OVERVIEW   This Appendix provides the OCC-APY Program for use in reviewing an institution's TIS calculations.

OCC-APY MICROCOMPUTER PROGRAM vl.0

INSTRUCTIONS

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Comptroller of the Currency
ATTN: Lockbox
P. 0. Box 70004
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ANNUAL PERCENTAGE YIELD (APY) PROGRAM

INTRODUCTION

APY.EXE is a microcomputer program written by Alan J. Dombrow, a national bank examiner, in the Office of the Comptroller of the Currency's (OCC's) Compliance Management Department, in Washington, D.C. The program provides an efficient, computerized tool for the calculation of annual percentage yields pursuant to the Truth in Savings Act (12 U.S.C. 4301 et seq.) and its implementing regulation (Regulation DD, 12 CFR 230).

This document:

Introduces you to the capabilities of the OCC's APY microcomputer program

Shows you what the program will do for you

Shows you how to work with the program to achieve the desired results

The APY program will enable you to calculate or verify the:

APY for account disclosures and advertising

APY earned for statement disclosures

The interest amount that corresponds to the APY or APY earned (not in all cases)

The APY program also will help you to determine:

When a disclosed APY or APY earned is overstated or understated

The number of compound periods between two dates (not in all cases)

Although great care has been taken to prepare the APY program, the OCC makes no express or implied warranties of any kind for either the model or the data generated by it. Use of the program is solely at the users risk and no liability for error shall attach to the OCC or Alan Dombrow. Further, the OCC does not recommend this model over any other methods, electronic or otherwise, for calculating annual percentage yields, annual percentage yields earned, or interest earned. Any other method that meets the precise requirements of 12 CFR 230 is permitted. The APY program is in the public domain and may be copied.

The microcomputer program contains one file called APY.EXE. This is the start-up program. It provides you with a menu to access to the program's other features. When it is first run, APY.EXE creates a configuration file called APYL.CFG. The configuration file retains certain information, such as color choices or account identification information, for later use in the program.

Hardware and Software Requirements

The APY program operates with:

> An IBM PC, IBM XT, IBM AT, IBM PS/1, or IBM PS/2 (or compatible microcomputer that reads nine-sector disks) with at least 512K of random access memory (RAM) and an 80-column screen

> MS-DOS or PC-DOS system software (version 3.3 or higher)

> A printer configured for your computer (recommended, but not required)

Account and Advertising Disclosures

The program computes interest using:

> No compounding

> Day units (for example, daily, weekly or bi-weekly compounding)

> Month units (for example, monthly, quarterly, or semiannual compounding)

> Year units (for example, annual or bi-annual compounding)

> Continuous compounding

> Other (for example, you enter the interest amount; it is not computed by the program)

It considers when the depositor is required by the deposit contract to withdraw interest periodically. For example, if a one-year certificate of deposit earns interest on a daily-compounded basis, but the depositor is required by the contract to withdraw the earned interest bi-weekly or monthly, the APY program calculates interest on that basis.

The APY program calculates the APY and interest for deposit accounts with:

> Regular rates (includes variable-rates but not premium or discount rates)

> Stepped rates (includes variable-rates, premium rates and discount rates)

> Tiered rates (includes fixed-rate tiers under Method A and Method B)

It calculates compounded interest for account and advertising disclosures only if the number of days in the term of the deposit can be divided evenly by the number of days in the compound period. For example, the program calculates interest on a 52-week certificate of deposit if the interest is compounded weekly, because 52 weeks (364 days) can be divided evenly by 7 (the number of days in a one-week period). The program will not compute interest on a one-year certificate of deposit if the interest is compounded bi-weekly, because 365 days cannot be divided evenly by 14. However, if the interest amount is known in such cases, the program still can compute the APY under the option [O]ther.

The APY program assumes that for account and advertising disclosures the term of a deposit begins at the beginning of the compound period. For example, if a deposit is made in the middle of a month and interest compounds at the end of each calendar month, the program assumes that the deposit was made at the beginning of the month (that is, at the beginning of the compound cycle).

Statement Disclosures

The program computes interest using:

> No compounding

> Day units (for example, daily, weekly or bi-weekly compounding)

> Continuous compounding

> Other methods

Interest can be calculated by any of those methods even if the period cannot be divided evenly by the compound period. For example, if the statement or other period is 30 days, and interest compounds weekly, the APY program compounds interest four times (28 days) and accrues it for the remaining two days to determine the interest for the statement cycle.

The APY program also calculates the APY earned and interest earned for deposit accounts with:

> Fixed-rates (includes regular and step rates)

> Variable-rates (includes regular and step rates)

> Tiered-rates (includes Method A and Method B)

APY PROGRAM

Accessing the APY Program

The APY program may be accessed by inserting the DOS disk in drive A and, after obtaining the A> prompt, inserting the APY program disk in drive A. After the A> prompt, type **APY** and press return.

NOTE: Alternatively, you may copy the APY program (APY.EXE) to a directory on a hard drive and access the program from that directory. If you access the program with a floppy disk, instead of from a hard drive, make sure that the disk is not write-protected. The APY program creates a configuration file called APYL.CFG and writes it to the floppy disk or hard drive. The configuration file retains certain information, such as color choices or account identification information, for use in the program.

Read the first two message screens. The main menu will appear showing:

> [A]ccount and Advertising APY

> [S]tatement APY

[C]hange Colors

You might want to begin by entering the letter "C" to select Change Colors. If your screen displays color, a menu appears that will let you select foreground and background colors (including highlighted foreground and highlighted background). If your screen does not display color, but your computer has a color graphics adapter, the same screen appears to let you choose various shadings for foreground and background colors, including highlighted versions. If your screen is monochrome and your computer does not have a color graphics adapter, a different screen appears that will let you choose either normal video display or reverse video display (for example, white letters on black background or black letters on white background) You may change colors at any time.

Try One APY (Account/Advertising Disclosure)

To calculate the APY and interest on a deposit now:

Select appropriate icon for Windows or DOS prompt (for example, at the A> prompt if the APY program disk is in disk drive A), type "APY" and press the return key to execute the APY program

When the first screen appears, press any key twice (for example, press the space bar twice) to pass through two information screens to reach the Main Menu

Type the letter "A" and press the return key to access the Account and Advertising APY option, which begins with a request for identification information

NOTE: If you make a mistake before pressing the return key, use the backspace key to erase your entry. If you made a mistake but pressed the return key to accept your entry, normally you could make changes when you reach the bottom of the screen. However, when you make an entry on the Main Menu screen, the program will advance to the next screen. Whenever you are not on the Main Menu screen, press the [Esc] key or [F10] function key as many times as is necessary to return to the main menu.

The next screen has a number of fields to complete. You start to make entries on this screen first by pressing any key, or you may skip this screen by pressing the [Page Down] or [F8] function key. The program will not accept inappropriate entries (for example, if the field requires a number, you will not be permitted to enter a letter). Press the [Fl] function key for help if you need more information about a particular field.

The current screen asks for information useful for printed documentation. You may enter any combination of letters, numbers, periods, commas, and minus signs, as well as symbols, such as / and &. On any other screen, do not use $ signs, or commas (for example, do not enter $5,000 or 5,000) when entering numbers.

The program begins by asking you to:

Enter your first name (If you wish, you may enter your first and last name in this field and skip the next prompt by pressing the return key.)

Enter your last name or, if you entered your last name at the previous prompt, press the return key

Enter any name (for example, ABC National Bank & Trust) for the name of the depository institution

NOTE: Had you selected the Statement APY option at the beginning of this exercise, the current screen now would also ask you for the depositor's name and account number.

You are now at the end of the screen. At the end of most screens the program asks if you wish to make any changes. The letter "N" appears in that field.

Press the return key to accept the "N" (that is, no changes). After you accept the letter "N", a new screen appears

NOTE: If any of your previous entries are incorrect, type the letter "Y" over the default value "N" and press the return key. You will then be allowed to make changes.

Enter the letter "D" as the measurement for the interest compounding method

NOTE: Your options for this field are [N]one, [D]ays, [M]onths, [Y]ears, [C]ontinuous, and [O]ther. Following the interest compounding method field, the screen will look different depending on which option you select. For example, by entering "D" for days, a prompt appears that asks you for the number of days between compounding. Had you entered "M" for months, the prompt would instead ask for the number of months between compounding.

Press the return key to accept the letter R to round the daily interest rate and daily interest amount

NOTE: Occasionally, the program will insert a value in a field for you (like the "N" described earlier at the prompt for changes). That value is a "default" value that the program, which tries to save you time, assumes you want entered.

To accept the default value, press the return key. If you wish to enter a different value, type in the new value and it will write over and replace the default value. If you change your mind, press the backspace key until you are at the beginning of the field and the original value will reappear. when you have the value you want, press the return key to accept it.

Except for the first field, the current screen has a default value in each field.

Press the return key to accept 15 decimal places for rounding the daily interest rate

Press the return key to accept 15 decimal places for rounding the daily interest amount

Press the return key to accept "1" as the number of days between compounding (that is, daily compounding)

Press the return key to accept "365" as the number of days in a year

Press the return key to accept "N", to ignore February 29 in a leap year

Press the return key to accept "N", to indicate that periodic interest withdrawals are not required

Press the return key to accept "N", to indicate that you do not wish to make any changes

Press the letter "R" and press the return key to process a regular-rate deposit

NOTE: The next screen will ask for information for the account type that you selected previously (Regular, in this case).

For the disclosed APY, type "4", "4.0" or "4.00" (not .04) and press the return key

NOTE: Whether you type "4", "4.0" or "4.00" to reflect a 4 percent disclosed APY, the program drops any trailing

zeros when it reprints any numerical entries (for example, when you elect to make changes at the bottom of the screen and the cursor returns to this entry, it will print 4).

For the deposit balance, press the return key to accept the 1000 default value

For the interest rate, type "3.5" and press the return key

For the daily rate factor, type "365" and press the return key

NOTE: The first time that you use the APY program, the field that contains the denominator for the daily rate factor is blank. Once you insert a number (for example, 365 or 360) in that field, that number appears whenever you view this field again. You will be able to change the number in this field as needed.

For the number of one-day periods in the deposit term (that is, the number of times interest will compound daily), type "365" and press the return key

The APY program calculates the interest at $35.62 and the APY at 3.56 percent. Since the disclosed APY was 4 percent, which is more than .05 percent greater than 3.56 percent, the APY program indicates that there is a violation.

Type the letter "P" (for printout) and press the return key. If your printer is connected, turned on and has paper, press the space bar to obtain a printout. Otherwise, press the [F10] function key to return to the Main Menu. If you obtain a printout, the program returns you automatically to the Main Menu. The printout provides essential information for documentation. It enables you to reconstruct the terms of the deposit to recalculate the interest amount and APY for this deposit.

Try Another APY (Statement Disclosure)

To calculate the APY earned and interest earned for a statement cycle:

If you have finished calculating an account/advertising APY, at the Main Menu type the letter "S" and press the return key

If you are starting at the beginning:

--   Select the APY icon or the appropriate DOS prompt (for example, at the A> prompt if the APY program disk is in disk drive A), enter "APY" to execute the APY program

--   When the first screen appears, press any key twice (for example, the space bar) to pass through two information screens to reach the Main Menu

--   Type the letter "S" and press the return key to access the Statement APY option

Press the [Down] key or [F8] function key to skip the account documentation screen

Enter "D" for the interest compounding method

Press the return key to accept all default values

Enter "F" for the type of account

Press the return key to accept "N" to indicate that you wish to make no changes

Enter "0" for the minimum average daily balance (ADB)

Enter "0" for the minimum daily balance. Enter 4.08 for the disclosed APY

Enter "4" (or 4.0 or 4.00) for the interest rate

Enter or accept "365" as the denominator for the daily rate factor

Enter "2" for the daily balance method

Enter "Y" to indicate that the daily balances for the period are the same as those used to calculate interest

NOTE: When the ledger balances and collected balances are treated the same for interest accruals, the APY program blocks out the "Collected" balance column and automatically inserts a "Y" in response to the prompt that asks if the ledger average daily balance should be used to calculate the APY.

For the number of days in the period, enter "30"

For the average daily balance for the period, press the return key to accept the default value of "0"

A screen will pop up that prompts you for 30 daily balances. Enter "1000" for the first 15 days and "2000" for the last 15 days

NOTE: The program automatically inserts the 4 percent interest rate. If the interest rate had been a variable rate, you would have had to enter the interest rate for each day in the statement cycle.

Press the return key to accept "N" to indicate that you do not wish to make any changes. The program inserts the average daily balance ($1,500) in the appropriate field and waits for your confirmation

Press the return key to accept the $1,500. The program calculates the interest earned at $4.94, using the daily balance accrual method

Press the return key to accept "N" to indicate that you wish to make no changes. The program then calculates the APY earned at 4.08 percent

Press the [ESC] key or the [Fl0] function key to return to the main Menu

Press the [ESC] key or the [F10] function key to exit the program (press the key twice if you wish to avoid the music)

You are finished. If you executed the program from the A drive, you may now remove your disk from disk drive A

Instructions for Data Entry

The APY program will prompt you for entries. In most cases, a small blinking light (the cursor) appears where you will need to enter values into the computer. The cursor will not appear whenever the message "Press any key to continue" appears on the bottom line of the screen. However, the message is highlighted in reverse video to direct your attention.

Enter a number with the numeric keys at the top of the keyboard or the numeric pad on the right, press the return key (on some computers this key may be designated by a bent arrow, RETURN, ENTER, or similar designation) . To use the numeric pad on the right side of the keyboard, you may have to press the [Num Lock] key at the top right. You also type letters ("Y", "N", etc.) from the computer keyboard, using upper-case or lower-case letters. However, the program will automatically convert lower-case letters to upper-case ones.

After typing an entry, you may press the backspace key to delete your entry and make a new one. In most cases, you must press the return key to get the computer to accept your input. Exceptions include after the prompt "press any key to continue" and when you press any function key, like [Fl0].

Terminating the Program

You may terminate the program or begin again by pressing the escape [ESC] key or the [Fl0] function key at any time after the first two message screens. When you press either of those two keys, all calculations will terminate, but you will be returned to the APY main menu and given a chance to begin again. At the APY Main Menu, you may terminate the program by pressing the [ESC] key or the [Fl0] function key.

Default Values

When an entry is first requested, a value may appear at the cursor location. This value is the default value. Whenever you wish to accept for your input the value already located at the cursor position (the default value), press the return key.

This program contains a number of time-saving, default values. For example, when the program asks you to enter the number of days in a year, the default value is set initially for 365. That number is used, because the program assumes that you wish to calculate an APY for a non-leap year or without regard to the extra day in leap year. Press return and the program will accept the default value of 365 as your input.

If you change the number of days in a year by typing 366 over it, your new value will become the default value for the current and subsequent deposit calculations. It will remain that value until you change it again or terminate the program.

If you type over a default value and change your mind, back space over your entry. Your entry will disappear and the default value will reappear. Incidentally, the program will not permit you to back space to a previous field (that is, the block that is highlighted), to type past the current field, to type off the right edge of the screen, or to move up any lines. To move to the next field or down a line, you must press the return key.

If you terminate the program, most default values are reset to their original values. For example, whenever you restart the program, the default value for the number of days in a year will always be 365.

Characters Used for Input

Depending on the entries requested, the APY program requires:

Numbers

-- The digits 0 through 9 and one decimal point, as needed, are used. Dollar signs and commas may not be used (for example, $50,000 should be entered as 50000 or 50000.00)

    Type the number and press the return key to enter it.

-- Except for the deposit interest rate, the program will not accept for input any number that has more than two digits to the right of the decimal place

-- When a number is needed by the program, the program will accept only a number and only one decimal point per number. If you have a problem getting the program to accept your entry, press the [F1] function key for help or refer to these instructions

Letters

-- Letters, such as "Y" (for yes), "N" (for no), "P" (for print), as well as other letters, are used in the program. Each may be entered as a lower-case or an upper-case letter. The return key must be pressed to enter the selection. The program will convert all letters to upper-case letters

-- When the program asks a question that requires the letter "Y" or the letter "N", it will accept only one of those letters. Any other entry (except the [Esc] or function keys) is invalid and will not be accepted

-- The letter "N" is the default value after a question that requires a Y/N response

Calendar information

The program must know the number of compounding periods between the date of the beginning of the interest accrual period and the maturity date of the deposit. For example, for a one-year deposit with daily compounding, there will be 365 compounding periods

If the deposit has stepped rates, the program also must know the number of compounding periods between each stepped rate. You may enter the information requested or, in some cases, let the program compute the information.

Under Appendix A to Regulation DD, the term of the deposit or the time interval between stepped rates is measured by actual days. February 29 in a leap year may be counted or ignored. The APY program gives you the option to do either

When using the calendar routine for account and advertising disclosures, the term of the deposit must be divisible evenly by the number of compounding units. For example, if a deposit is made March 15 and interest is compounded monthly (at the end of each calendar month), the calendar routine requires a term of full calendar months. Although the program will use the actual number of days in each month, it assumes that interest will first accrue at the beginning of a calendar month (for example, March 1) and will compound at the end of the calendar month (for example, March 31)

The calendar approach follows the general allowance by Regulation DD that states:

For time accounts that are offered in multiples of months, institutions may base the number of days on either the actual number of days during the applicable period, or the number of days that would occur for any actual sequence of that many calendar months (See Appendix A, I.A. to Part 230, Regulation DD).

When interest is compounded monthly, or is required to be withdrawn monthly, the program asks for the starting month and year and uses those values to begin interest computations. However, the calendar routine will not calculate the number of monthly compounding periods in a deposit term. You must make that determination.

Enter "0" (zero) to access the program's calendar if the prompt indicates that the calendar routine is available. You will be asked to enter the beginning and ending dates for the term of the deposit or the period interval for a stepped-rate deposit. After the program calculates the number of compounding periods, it inserts that value in the appropriate field. You may confirm that value by pressing the return key or entering a different value.

NOTE: When entering the beginning and ending dates for the term of the deposit, the program user must add one additional day for the calendar to compute the correct number of days. The OCC has been made aware of the glitch in the computer program.

Main Menu

When you execute the APY program, you will arrive at the Main Menu after reading two information screens. Select option [A] to calculate the APY (and interest in most cases) for Account Disclosures and Advertising. Select option [S] to do the same thing for periodic Statement disclosures. Select option [C] to change screen colors. Color changes are retained by the program and may be made at any time.

Account and Advertising APYs

After you select Account and Advertising APY from the Main Menu, option [A], you can calculate an APY. Remember that whenever you are at a prompt to make an entry you may press the [1] function key for help.

The screen after the main menu requests identification information and maybe skipped by pressing the [Page Down] key or [F8] function key. If you wish to provide the information requested, press any other key to continue. From that point on you may leave the program by pressing the [Esc] key or the [Fl0] function key.

For each deposit account, information is requested as follows:

ENTER YOUR FIRST NAME: Enter your first name. (If you wish, you may enter your first and last name here, including any middle initial and skip the next prompt.)

ENTER YOUR LAST NAME: Enter your last name.

ENTER NAME OF DEPOSITORY INSTITUTION: Enter the name of the institution that offers the deposit account.

After you have entered the name of the institution (or pressed return to leave the field blank), the program will ask you if you wish to make any changes. When you are satisfied with your entries, press the return key to accept "N", the default value.

A new screen will appear where you begin to enter account information, as follows:

ENTER MEASUREMENT FOR INTEREST COMPOUNDING METHOD: You have the following six options from which to choose:

None – Interest is not compounded

Days – Interest is compounded in terms of days (for example, 1 means daily compounding and 7 means weekly compounding)

Months – Interest is compounded in terms of months (for example, 1 means monthly compounding and 3 means quarterly compounding)

Years – Interest is compounded annually or in multiples of years

Continuous – Interest is compounded continuously

Other – The program will not calculate interest under this option. You must enter the interest and the program will calculate the APY only

You will be asked to enter information for the option that you select. On the same screen you might be asked about:

Accuracy – The program will round or truncate the daily interest rate between six and 15 decimal places. It will also round or truncate the daily interest amount between two and 15 decimal places

Frequency of compounding – The program will compound interest for most, if not all, time intervals. For example, it will compound interest daily, weekly, bi-weekly, monthly, quarterly, semi-annually, annually, biannually, and continuously

The effect of leap year – The program asks whether you want one year to reflect 365 or 366 days. That figure is used in the APY calculation (See the numerator of the exponential in the Regulation DD Appendix A formula) . You should not enter 366, unless the term of the deposit is one year or less and February 29 occurs during the deposit term. You should also tell the program to count 2/29, only if that date occurs during the term of the deposit

Interest withdrawal requirements – The program asks for the basis on which interest is required to be withdrawn. If it is not required, select "K". If it is required to be withdrawn daily or in multiples of a day (for example, biweekly), enter "D". If it is required to be withdrawn monthly or in multiples of a month, enter "M". If you select "D" or "M", the program will request from you later what the daily or monthly interval is between required withdrawals

ENTER TYPE OF ACCOUNT: Choose one of the following four options.

A regular-rate account has a constant interest rate during the term of the deposit. The rate might be fixed or variable, in which case the initial rate is assumed to exist throughout the deposit term

A stepped-rate account has more than one interest rate during the term of the deposit. It includes deposits with premium or discounted rates because those rates are applicable only for the time the contract requires them to be in effect. After the premium or discount period, the rate must revert to the rate that would have been in effect when the account opened (had there been no premium or no discount)

A tiered-rate account has two or more interest rates applicable to specified balance levels

-- Tiering Method A pays interest on the full balance in the account using a single interest rate that corresponds to the applicable tier. If the deposit size changes to a different tier level, a different rate would be used. However, the rate would apply to the entire balance

-- Tiering Method B pays interest using the stated interest rate only on that portion of the balance within the specified tier. As a result, a single deposit may have two or more interest rates, one rate for each portion of the balance. The rates applied to each portion of the balance are applied for the entire term of the deposit

You will be asked for information for the type of account that you selected. You must always enter the following three items:

DISCLOSED APY: Any rate of one percent or greater. Do not enter the decimal equivalent of the rate (for example, a disclosed or estimated rate of 4 percent should be entered as 4, not as .04). No more than two numbers to the right of the decimal place are permitted (for example, 4.13 is permitted, but 4.134 is not). If there is no disclosed APY, this field must still be completed. Any value greater than or equal to one may be used. If you enter the disclosed APY, the program will apply current Regulation DD accuracy tolerances to determine whether the disclosed rate is understated or overstated. If the disclosed rate is in error, the program will indicate that there is a violation. If the disclosed rate is accurate, the program will state the correct APY.

BALANCE: The balance on which interest and the APY will be calculated. For regular deposits, a balance of at least $1,000 is suggested. The program provides $1,000 as the default value in that case. For stepped-rate deposits, you need enter only the initial deposit. The program will insert the balance for subsequent periods, including increased balances due to compounding. Remember, enter no more than one decimal point, no dollar signs or commas, and no more than two digits to the right of the decimal point. For tiered-rate deposits, enter the deposit amount that corresponds to interest rate indicated.

DAILY RATE FACTOR: To calculate interest daily, the program takes the annual rate and divides it by a specified number of days (in other words, it multiplies the annual rate by the daily rate factor). The annual rate may be divided by any number less than 366 and, if February 29 occurs during the deposit term, the annual rate may be divided by 366. The value entered at this prompt must be entered only once. The program retains your input for future calculations. However, normally you may change this value. You may even use two different values for a stepped-rate deposit if you wish.

Depending on the types of account and compounding, you may also be asked for the:

INTEREST RATE: For account disclosures and advertising, unless the compounding method is [0]ther. Any rate of one percent or greater must be entered here. Do not enter the decimal equivalent of the rate (for example, a disclosed or estimated rate of 4 percent should be entered as 4, not as .04) . More than two numbers to the right of the decimal place are permitted (for example, 4.1344 is permitted). The program will use the interest rate (rounded or truncated as directed by you earlier in the program) to calculate daily interest on the deposit (compounded on the basis that you also indicated earlier in the program).

TOTAL PERIOD NUMBER: For stepped-rate accounts, the number of periods during which the interest rate will change. For example, there are two periods for an interest rate of 4 percent for the first three months and 3 percent for the remaining nine months. The program will accept up to 10 periods. For each period, the program asks for the information necessary to compute interest. After it asks for the full amount of information for the first period, it will ask only for the interest rate, daily rate factor, and time interval for later periods. The screen indicates which period is being addressed.

TOTAL TIER NUMBER: For tiered-rate accounts, the number of tiers that require a different interest rate. For example, there are two tiers for an interest rate of 3 percent for balances of $1,000 or less and 4 percent for balances over $1,000. The program will accept up to 10 tiers. For each tier, the program will ask for tier balances and the interest rates that correspond to those balances. The tiers are:

> Tiering Method A – The program asks for the same information for each tier. Each tier essentially is treated as a separate fixed-rate deposit. The screen indicates which tier is being addressed.

> Tiering Method B – This tiering method can be quite complicated. The program presents the low end and high end of each tier and requests only that information necessary to calculate interest and the APY for that end of the tier. For example, Regulation DD's Appendix A shows Tier method B with three interest rates (that is, three tiers). The first tier has one interest rate. The second tier has two interest rates (with corresponding balances) for the low end of the tier and two interest rates (with corresponding balances) for the high end of the tier. The third tier has three interest rates (with corresponding balances) for the low end of the tier and three interest rates (with corresponding balances) for the high end of the tier. That is 11 interest rates with 11 corresponding balances. The program provides 11 separate screens to display that information. However, since much of the information required on those screens can be calculated by the program, you are asked to supply only a minimal amount of data.

ADDITIONAL INFORMATION: The program also asks for the number of compounding periods or the number of days in the deposit term or in the stepped-rate interval. when there is no compounding, daily compounding, or continuous compounding, the program only needs the number of days in the deposit term. Otherwise, you must enter the number of compound units (for example, if the deposit has a one-year term and interest compounds monthly, enter 12 for the number of one-month periods in the deposit term.) (See the information under the previous heading *Calendar Information* for more information on calculating compounding periods measured in days.)

Interest and APY Calculations for Account Disclosures and Advertising

After all of the necessary information has been entered, the program, if requested to do so, calculates the interest. It will also calculate the annual percentage yield and compare that yield to the disclosed APY for accuracy. If the disclosed APY is not within tolerance, the program indicates that a violation has occurred (da da da dum   ).

Statement APYs

After you select Statement APY from the Main Menu, option [S] , you can calculate an APY. Remember that whenever you are at a prompt to make an entry you may press the [F1] function key for help.

The screen after the main menu requests identification information and may be skipped by pressing the [Page Down] key or [F8] function key. If you wish to provide the information requested, press any other key to continue. From then on, you may leave the program by pressing the [Esc] key or the [Fl0] function key.

For each periodic statement, the information requested on this screen is the same as that requested for account disclosures and advertising discussed earlier. You are prompted to enter the:

DEPOSITOR'S NAME: This name should identify the depositor adequately for documentation.

ACCOUNT NUMBER: This designation, if any, should identify the account for retrieval. After you have entered the account number (or pressed return to leave the field blank), the program asks if you wish to make any changes. When you are satisfied with your entries, press the return key to accept "N", the default value.

A new screen appears where you will begin to enter the following statement information:

ENTER MEASUREMENT FOR INTEREST COMPOUNDING METHOD: You have four options f rom which to choose.

> None – Interest is not compounded during the period of review

> Days – Interest is compounded in terms of days (for example, 1 means daily compounding while 7 means weekly compounding)

> Continuous – Interest is compounded continuously

> Other – The program will not calculate interest under this option. You must enter the interest and the program will calculate the APY only

As with the previous prompts for account disclosures and advertising, you will be asked to enter information for the compounding option that you select. On the same screen you might be asked about accuracy, frequency of compounding, and the effect of leap year. You will not be asked about interest withdrawal requirements. The program assumes that interest withdrawals may be required at the end of the statement period, but that none occur during the statement period. If interest withdrawals are required to occur during the statement period, select option [O]ther to calculate the APY.

If you enter "N" for no compounding of interest during the period of review, you will be asked for:

> Additional APY formula – Answer "Y" if you wish the program to calculate the APY using the additional formula provided in Appendix A. The additional APY is used when a periodic statement is sent more often than the period for which interest is compounded. For example, if interest compounds annually, but the statement is sent monthly (which means no compounding during the cycle), the alternative APY should be selected.

> Days in compounding period – Enter the number of days in the compounding period. You should enter the actual number of days in the current compounding period. For example, if interest compounds each calendar quarter, and the statement reflects activity for the month of May, enter 91 (for the compounding period of April, May and June).

ENTER TYPE OF ACCOUNT: You have four options from which to choose:

> A fixed-rate account has a constant interest rate during the term of the deposit. It may include a stepped-rate account when the period during which the interest rate does not change corresponds to the statement period.

> A variable-rate account has more than one interest rate during the statement period. It includes a stepped-rate account when the period during which the interest rate does change occurs during the statement cycle. For example, if the statement cycle is 4/1 to 5/1 and the interest rate changes on 4/15 from 4 percent to 3 percent, you should select the variable rate option.

> A tiered-rate account has two or more interest rates applicable to specified balance levels. The APY program assumes that tiered-rate accounts have fixed interest rates. You have two options in this category, Tiering Methods A and B, which were described earlier under the heading Account and Advertising APYs. For statements, however, the APY program calculates only one APY and one interest amount based on the tiering method and account activity.

You will be asked for information for the type of account that you selected. You must always enter the following nine items:

MINIMUM ADB: Any numerical value of zero or greater may be entered. Enter "0" (zero) if there is no minimum average daily balance requirement. If the value entered is greater than zero, the program computes interest using the average daily balance method. When the program calculates interest, it computes zero interest if the average daily balance for the statement cycle is less than the minimum average daily balance value entered in this field. If this value is greater than zero, and a value greater than zero is also entered at the next prompt (Minimum daily balance), the program computes interest based on whichever minimum balance requirement is most favorable to the depositor.

For example, if the minimum average daily balance requirement is $500, the minimum daily balance requirement is $300, and interest accrues using the average daily balance method, the program computes interest on the account (based on the average daily balance method) if the average daily balance is $500 or more or if each day's balance is at least $300.

Under the same circumstances, if interest accrues based on the daily balance method, the program will compute interest for each day of the statement cycle, if each day's balance has at least $300 or if the average daily balance is $500 or more.

MINIMUM DAILY BALANCE: Any numerical value of zero or greater may be entered. Enter "0" (zero) if there is no minimum daily balance requirement. If this value is greater than zero, the program computes interest using the daily balance method. When the program calculates interest, it computes zero interest for each day the balance is less than the minimum daily balance requirement. If this value is greater than zero, and a value greater than zero is also entered at the previous prompt (minimum ADB), the program computes interest based on whichever minimum balance requirement is most favorable to the depositor.

DISCLOSED APY: Any rate of one percent or greater. Do not enter the decimal equivalent of the rate (for example, a disclosed or estimated rate of 4 percent should be entered as "4", not as ".04"). No more than two numbers to the right of the decimal place is permitted (for example, 4.13 is permitted, but 4.134 is not). If there is no disclosed APY, this field still must be completed. Any value greater than or equal to one may be used. If you enter the disclosed APY, the program will apply current Regulation DD accuracy tolerances to determine whether the disclosed rate is understated or overstated. If the disclosed rate is in error, the program will indicate that there is a violation. If the disclosed rate is accurate, the program states the correct APY.

DAILY RATE FACTOR: To calculate interest daily, the program takes the annual rate and divides it by a specified number of days (in other words, it multiplies the annual rate by the daily rate factor). The annual rate may be divided by any number less than 366 and, if February 29 occurs during the statement cycle, the annual rate may be divided by 366. The value entered at this prompt must be entered only once. The program retains input for future calculations. However, you normally will be permitted to change this value.

INTEREST CALCULATION METHOD: Interest may be calculated using only one of two permissible methods, the average daily balance method (option 1) or the daily balance method (option 2). If there is a minimum balance requirement, the minimum balance must be computed the same way as interest is calculated. The program automatically ensures that is the case.

For example, if you enter a value greater than zero for the minimum average daily balance and enter a zero for the minimum daily balance, the program automatically inserts a 1 for the interest calculation method. Also, if you enter a zero for the minimum average daily balance and enter a value greater than zero for the minimum daily balance, the program will automatically insert a "2" for the interest calculation method. However, if you enter a value greater than zero for the minimum average daily balance and enter a value greater than zero for the minimum daily balance, the program does not automatically insert any value for the interest calculation method, since either method would be permissible. The average daily balance method is inserted automatically for continuous compounding.

LEDGER = COLLECTED: Interest is paid on either the ledger balance or the collected balance, if they are different. For example, if a $1,000 check is deposited into a new account on the first day of the cycle (Day 1) , but the deposit does not earn interest until Day 2, the ledger balance will reflect a $1, 000 balance for Day 1 and Day 2, while the collected balance will reflect a zero balance for Day 1 and a $1, 000 balance for Day 2. If you enter "Y" for yes at this prompt, the program will use the ledger balance (under the column "LEDGER") to calculate interest. It automatically blocks out the "COLLECTED" column. If you enter "N" for no, the program uses the collected balance (under the column "COLLECTED") to calculate interest.

LEDGER ADB: Either the ledger or collected average daily balance is used to calculate the APY. If interest is calculated using the collected balance, the average daily balance used to calculate the APY may be based on either the ledger balances or the collected balances. (If interest is calculated using the ledger balances, the average daily balance used to calculate the APY must be based on the ledger balances.) Enter "Y" (for yes) to use the ledger ADB to calculate the APY. Enter "N" (for no) to use the collected ADB to calculate the APY.

DAYS IN PERIOD: The number of days in the statement cycle. If interest is calculated for a period other than the statement period, then enter the number of days for that other period instead. Since a statement cycle does not exceed a quarterly period, the value entered normally would not exceed 92. However, because of weekends and holidays, the program allows a value to be entered that does not exceed 96. Most of the time you will be able to enter "0" (zero) for a calendar routine that will calculate the number of days in the statement cycle for you.

NOTE: When entering the beginning and ending dates for the program to calculate the number of days in the statement cycle, the program user must add one additional day due to a "glitch" in the computer program.

AVERAGE DAILY BALANCE FOR PERIOD: The APY program will not calculate interest unless you enter "0" (zero) in this field. The average daily balance for the statement cycle is based on the ledger balances, the collected balances, or both. When the ledger balances equal the collected balances, the "COLLECTED" column is blocked, since it is not needed. Both columns are completed if interest accrues on the collected balances, but the APY is calculated based on the ledger average daily balance.

NOTE: If the ledger balance does not equal the collected balance, and the ledger average daily balance will be used to calculate the APY, you must enter two average daily balances. Enter the ledger average daily balance for the APY calculation and the collected average daily balance for the interest calculation. The APY program computes each average daily balance, if you enter "0" (zero) under each column ("LEDGER" and "COLLECTED") after the "average daily balance for period" prompt.

If the APY calculation uses the ledger average daily balance, but interest is calculated using the collected <u>daily</u> balance method, you do not need any collected average daily balance. If the program computes the interest, based on the collected daily balance method, it will also insert the collected average daily balance in this field. However, that value will not be used. If you elect not to have the program compute the collected daily balance interest, you must still enter a value greater than zero in this field. You could, for example, enter 1, to move to the next field.

Depending on the account types and compounding, and the options you select, you may also be asked for:

TOTAL TIER NUMBER: For tiered-rate accounts, the number of tiers that require a different interest rate. For example, there are two tiers for an interest rate of 3 percent for balances of $1,000 or less and 4 percent for balances over $1,000. The program accepts up to 10 tiers. For each tier, the program also asks for tier balances and the interest rates that correspond to them.

INTEREST RATE: For periodic statement disclosures, unless the compounding method is [O]ther or the account type is [V]ariable. If the account type is [V]ariable, the program asks for each day's interest rate, but only if you elect to let the program compute the interest on the account. After you enter the interest rate for the first day in the cycle, the program will assume that the rate will not change. If the rate does not change, you need only press the return key to accept the rate provided by the program for each day. If the rate does change, you need only type in the correct rate and press the return key.

If the account has a fixed interest rate, enter the interest rate immediately after you enter the Disclosed APY. Then, if the program calculates the account interest, it inserts the fixed interest rate next to each day's balance.

If the account is a tiered-rate account (with tiering Method A or B), enter the interest rate and corresponding balances for each tier immediately after you enter an "A" or "B" in the "Enter type of account" field.

Any rate of one percent or greater must be entered. Do not enter the decimal equivalent of the rate (for example, a disclosed or estimated rate of 4 percent should be entered as "4", not as ".04") . More than two numbers to the right of the decimal place are permitted (for example, 4.1344 is permitted) . The program uses the interest rate (rounded or truncated as directed earlier) to calculate daily interest on the deposit (compounded on the basis as directed earlier).

BALANCE: This prompt will appear if you let the program compute your interest. It appears immediately after you enter "0" (zero) in the "average daily balance for period" field. You will be asked to enter the account balance for each day in the statement cycle. Enter the balance on which interest may be calculated. After you enter the balance for the first day in the cycle, the program assumes that the balance will not change. If the balance does not change, you need only press the return key to accept the balance provided by the program for each day. If the balance does change, you need enter only the correct balance and press the return key. Enter no more than one decimal point, no dollar signs or commas, and no more than two digits to the right of the decimal point.

NOTE: Normally, you enter a balance that does not include accrued but uncredited interest. However, in computing the annual percentage yield earned on daily balance accounts in which interest is credited less frequently than interest is compounded and statements are provided, you <u>should</u> add accrued but uncredited interest to the balance at the beginning of statement cycles other than the initial statement cycle in each new crediting period.

For example, assume that interest compounds daily on an account that uses the daily balance method and interest is credited quarterly. Statements are furnished monthly. The "additional APY formula" would not be used because statements are not issued more frequently than interest is compounded. The initial and only deposit, made at the beginning of a calendar quarter, is $1,000. At the end of the first month, a periodic statement is produced. It includes an APY earned based on the standard APY earned formula, the initial $1,000 deposit, and daily compounded interest of $3.29.

At the beginning of the second month, interest does not accrue only on the original $1, 000, which is the actual balance in the account. It will accrue on the full balance of principal plus accrued but uncredited interest, which is $1,003.29. Since the balance on which interest accrues, as of the first day of the new statement cycle, is $1,003.29, you should enter that balance as the balance for Day 1. Assuming that no deposit activity occurs during the second month, the APY program computes $1,003.29 as the average daily balance for calculating the APY earned for the second periodic statement.

INTEREST: Either you must calculate and enter the amount of interest in this field, or let the program calculate and enter it for you. Enter no more than one decimal point, no dollar signs or commas, and no more than two digits to the right of the decimal point. Interest must be based on the average daily balance method or on the daily balance method. If you wish the program to compute the interest, enter "0" (zero) in the "average daily balance for period" field. That option is not available if the interest compounding method is [O]ther.

Interest and APY Calculations for Statements

After all of the necessary information has been entered, the program will calculate the interest, if requested. It will also calculate the annual percentage yield and compare it to the disclosed APY for accuracy. If the disclosed APY is out of tolerance, the program will indicate that a violation has occurred (da da da dum   )

Documentation Printout – Account, Advertising, and Statements

Normally, any screen may be printed as hard copy if:

> A printer is connected to the computer, and

> The keys SHIFT and PRTSC are pressed simultaneously (or, on other computers, only the PRINT SCREEN key is pressed)

However, the APY program has a more effective way of obtaining printed documentation. To obtain a hard copy printout for documentation while using the APY program, enter the upper-case or lower-case letter "P" whenever the following prompt is on the bottom line of the screen:

Enter "P" for Printout or "A" for another APY

After you enter the letter "P", a statement appears near the bottom of the screen to remind you to make sure that the printer is connected, has paper, and is on line. Then press the space bar to obtain a printout that summarizes all of your input and the program's output. The printed documentation includes the current date, which is the same as the one that appears on the Main Menu screen. If you do not want a printout after you have already entered the letter "P", press the [Fl0] key to return to the APY Menu.

ACCOUNT AND ADVERTISING DISCLOSURES – APY CALCULATIONS

Example 1 – Stepped-Rate Account (Different Rates Apply in Succeeding Periods)

Facts/Instructions: An institution offers a $1,000 6-month CD on which it pays a 5% interest rate, compounded daily, for the first three months (which contain 91 days), and a 5.5% interest rate, compounded daily, for the next three months (which contain 92 days). Calculate the APY for the account.

Input Procedures:

At main menu, select the Account and Advertising APY option. Skip the next screen.

Select "D" for daily compounding, and accept all other defaults on this screen.

Select the stepped-rate account option and enter all required information.

-- Input 2 for the total period number.

-- Input a number of 1 or greater for the underlined APY.

Output: APY 5.39%; Interest $26.67

Example 1   OUTPUT SHEET
** APY PROGRAM ACCOUNT DISCLOSURE/ADVERTISING DOCUMENTATION **

Documentation Date: 11-14-1995
Prepared By:

Name of Institution:

STEPPED-RATE ACCOUNT

Total number of periods: 2
Daily rate factor: 1/365
Number of days in compounding period: 1
Accuracy method for interest rate and amount: Round
   Decimal places for daily interest rate: 15
   Decimal places for daily interest amount: 15
Days in year (for APY calculation):   365
Count February 29 in leap year?   No

....

PERIOD NO. 1

No. of 1-day periods in this period: 91

Principal amount of deposit   = $1,000.00
Annual interest rate   =   5.0000%
Interest through Period   = $12.54   (Program calculated)

....

PERIOD NO. 2

No. of 1-day periods in this period: 92

Principal amount of deposit   = $1,012.54
Annual interest rate   =   5.5000%
Interest through Period 2   = $26.67   (Program calculated)

....

Disclosed APY   =   1.00%
APY   =   5.39%   (5.38996975341042%)

** VIOLATION **   The disclosed APY is understated by 4.38996975341042%

ACCOUNT AND ADVERTISING DISCLOSURES – APY CALCULATIONS (continued)

Example 2 – Tiered-Rate Account using Tiering Method A

Facts/Instructions: Under this method, an institution pays **on the full balance in the account** the stated interest rate that corresponds to the applicable deposit tier, and it should disclose an APY for each tier.

The institution offers the following tiered rates on money market accounts, and interest is compounded daily. Calculate the APYs for accounts with the following balances: **$1,000, $8,000, and $20,000**.

Interest Rate	Deposit balance required to earn rate
5.25%	Up to but not exceeding $2,500
5.50%	Above $2,500 but not exceeding $15,000
5.75%	Above $15,000

Input Procedures:

> At main menu, select the Account and Advertising APY option. Skip the next screen.
>
> Select "D" for daily compounding, and accept all other defaults on this screen.
>
> Select the option for tiering method A and enter all required information.
>
> --   Input "3" for total (number of) tiers, and enter the related data.
>
> --   Input a number of "1" or greater for the underlined disclosed APY.
>
> --   Input "365" for the number of 1-day periods in the deposit term.
>
> Repeat steps for the remaining balances.

Output: $1,000 balance - APY 5.39%; Interest $53.90
        $8,000 balance - APY 5.65%; Interest $452.29
        $20,000 balance - APY 5.92%; Interest $1,183.61

Example 2 (continued)   OUTPUT SHEET
              ** APY PROGRAM ACCOUNT DISCLOSURE/ADVERTISING DOCUMENTATION **

Documentation Date: 11-14-1995
Prepared By:
Name of Institution:

TIERED-RATE ACCOUNT - METHOD A

Total number of tiers: 3
Daily rate factor: 1/365
Number of days in compounding period: 1
Accuracy method for interest rate and amount: Round
  Decimal places for daily interest rate: 15
  Decimal places for daily interest amount: 15
Days in year (for APY calculation):   365
Count February 29 in leap year?   No
No. of 1-day periods in deposit term: 365

Tier	Interest Rate (%)	Deposit balance required to earn rate
1	5.25	Up to but not exceeding $2500
2	5.5	Above $2500 but not exceeding $15000
3	5.7	Above $15000

TIER NO. 1
Principal amount of deposit   = $1,000.00
Annual interest rate   =   5.2500%
Total interest in Tier 1   = $53.90   (Program calculated)

Disclosed APY for Tier 1   =   1.00%
APY in Tier 1   =   5.39%   (5.39%)

** VIOLATION **   The disclosed APY is understated by 4.39%

TIER NO. 2
Principal amount of deposit   = $8,000.00
Annual interest rate   =   5.5000%
Total interest in Tier 2   = $452.29   (Program calculated)

Disclosed APY for Tier 2   =   1.00%
APY in Tier 2   =   5.65%   (5.653625%)

** VIOLATION **   The disclosed APY is understated by 4.653625%

TIER NO. 3
Principal amount of deposit   = $20,000.00
Annual interest rate   =   5.7500%
Total interest in Tier 3   = $1,183.61   (Program calculated)

Disclosed APY for Tier 3   =   1.00%
APY in Tier 3   =   5.92%   (5.91805%)

** VIOLATION **   The disclosed APY is understated by 4.91805%

ACCOUNT AND ADVERTISING DISCLOSURES – APY CALCULATIONS (continued)

Example 3 – Tiered-Rate Account using Tiering Method B

Facts/Instructions: Under this method, an institution pays the stated interest rate **only on that portion of the balance within the specified tier.** In such cases, the institution must disclose a **range** that shows the lowest and highest APYs for each tier (other than the first tier, which has the same APY throughout). The low APY is based on interest earned for a year assuming the minimum principal required to earn the interest rate for a tier, and the high APY is based on interest earned on the highest principal that could be deposited to earn that same interest rate. If there is no stated maximum amount, an institution may choose any maximum amount to calculate the high APY.

Assume the same interest rates and balance ranges shown in example 2 to calculate the APYs using Tiering Method B. Assume an initial deposit balance of $1,000, and use $100,000 as the maximum deposit balance to calculate the final APY. (Five APYs will be calculated, one for the first tier and two each (low and high) for the next two tiers.)

Input Procedures:

At main menu select the Account and Advertising APY option. Skip the next screen.

> Select "D" for daily compounding, and accept all other defaults on this screen.
>
> Select the option for tiering method B and enter all required information.
>
> -- Input "3" for total (number of) tiers, and enter the related data.
>
> -- Input a number of "1" or greater for the underlined APY.
>
> -- Input "365" for the number of 1-day periods in the deposit term.
>
> Repeat steps for the remaining tier balances.

NOTE: One calculation will be performed to obtain the APY for the first tier. Two calculations will be performed to obtain each APY for the second tier, and three calculations will be performed to obtain each APY for the third tier.

Output: First tier APY - 5.39%; Interest $53.90
Second tier APYs - 5.39% to 5.61%; Interest $134.75 to $841.45
Third tier APYs - 5.61% to 5.87%; Interest $841.45 to $5,871.79

Example 3 (continued)   OUTPUT SHEET
                ** APY PROGRAM ACCOUNT DISCLOSURE/ADVERTISING DOCUMENTATION **

Documentation Date: 11-14-1995
Prepared By:

Name of Institution:

TIERED-RATE ACCOUNT - METHOD B

Total number of tiers:	3
Daily rate factor:	1/365
Number of days in compounding period:	1
Accuracy method for interest rate and amount:	Round
Decimal places for daily interest rate:	15
Decimal places for daily interest amount:	15
Days in year (for APY calculation): 365	
Count February 29 in leap year?	No
No. of 1-day periods in deposit term:	365

Tier	Interest Rate(s)	Deposit balance required to earn rate
1	5.25	Up to but not exceeding $2500
2	5.5	Above $2500 but not exceeding $15000
3	5.75	Above $15000

TIER NO. 1

Principal amount of deposit	=	$1, 000. 00
Annual interest rate	=	5.2500%
Total interest in Tier 1	=	$53.90 (Program calculated)
Disclosed APY for Tier 1	=	1. 00%
APY in Tier 1	=	5.39% (5.39%)

** VIOLATION **   The disclosed APY is understated by 4.39%

Example 3 (continued)   OUTPUT SHEET
LOW END   TIER NO. 2
Principal amount of deposit   = $2, 500. 00
Annual interest rate   =   5.2500%

LOW END   TIER NO. 2
Principal amount of deposit   = $0. 01
Annual interest rate   =   5. 5000%
Total interest in Tier 2   = $134.75   (Program calculated)

Disclosed APY for Tier 2   =   1.00%
APY in Tier 2   =   5.39%   (5.38997844008624%)

** VIOLATION **   The disclosed APY is understated by 4.38997844008624%

- -

HIGH END   TIER NO. 2
Principal amount of deposit   = $2, 500. 00
Annual interest rate   =   5.2500%

HIGH END   TIER NO. 2
Principal amount of deposit   = $12,500. 00
Annual interest rate   =   5. 5000%
Total interest in Tier 2   = $841.45   (Program calculated)

Disclosed APY for Tier 2   =   1. 00%.
APY in Tier 2   =   5.61% (5.60966666666667%)

** VIOLATION **   The disclosed APY is understated by 4.60966666666667%

- -

Example 3 (continued)   OUTPUT SHEET
LOW END TIER NO. 3

Principal amount of deposit	=	$2, 500. 00
Annual interest rate	=	5.2500%

LOW END TIER NO. 3

Principal amount of deposit	=	$12, 500. 00
Annual interest rate	=	5. 5000%

LOW END TIER NO. 3

Principal amount of deposit	=	$0. 01	
Annual interest rate	=	5. 7500%	
Total interest in Tier 3	=	$841.45	(Program calculated)

Disclosed APY for Tier 3	=	1.00%	
APY in Tier 3	=	5.61%	(5.60966292689138%)

** VIOLATION **   The disclosed APY is understated by 4.60966292689138%

HIGH END TIER NO. 3

Principal amount of deposit	=	$2,500.00
Annual interest rate	=	5.2500%

HIGH END TIER NO. 3

Principal amount of deposit	=	$12,500.00
Annual interest rate	=	5.5000%

HIGH END TIER NO. 3

Principal amount of deposit	=	$85,000.00	
Annual interest rate	=	5.7500%	
Total interest in Tier 3	=	$5,871.79	(Program calculated)

Disclosed APY for Tier 3	=	1. 00%	
APY in Tier 3	=	5.87%	(5.87179%)

** VIOLATION **   The disclosed APY is understated by 4.87179%

ACCOUNT AND ADVERTISING DISCLOSURES – APY CALCULATIONS (continued)

Example 4 – Fixed-Rate Account with Required Interest Withdrawal

Facts/Instructions: In January 1995, an institution offers a $1,000 one year CD (365 day term) on which it pays a 5% interest rate (compounded daily). Interest is required to be withdrawn on a quarterly basis. Calculate the APY for the account.

Input Procedures:

At main menu select the Account and Advertising APY option. Skip the next screen

Select "D" for daily compounding and "M" for the measurement for the required interest withdrawal period. (As discussed in the appendix, the **monthly** option should be used when the period is in multiples of months.) Accept all other defaults on this screen

Select the regular rate account option and enter all required information

-- Input a number of "1" or greater for the underlined disclosed APY

-- Enter "4" for the number of required interest withdrawal periods and "3" for the number of months between these periods

Output: APY 5.03%; Interest $50.31

Example 4 (continued)   OUTPUT SHEET
                    ** APY PROGRAM ACCOUNT DISCLOSURE/ADVERTISING DOCUMENTATION **

Documentation Date: 11-14-1995
Prepared By:

Name of Institution:

REGULAR ACCOUNT

Beginning month:	January
Beginning year:	1995
Daily rate factor:	1/365
Number of days in compounding period:	1
Accuracy method for interest rate and amount:	Round
Decimal places for daily interest rate:	15
Decimal places for daily interest amount:	15
Days in year (for APY calculation):	365
Count February 29 in leap year?	No
No. of 1-day periods in deposit term:	365
Required interest withdrawal periods in term:	4
Months between required interest withdrawals:	3

Principal amount of deposit	=	$1,000.00	
Annual interest rate	=	5.0000%	
Total interest	=	$50.31	(Program calculated)
Disclosed APY	=	1.00%	
APY	=	5.03%	(5.031%)

** VIOLATION **   The disclosed APY is understated by 4.031%

ACCOUNT AND ADVERTISING DISCLOSURES – APY CALCULATIONS (continued)

Example 5 – Time Account with a Stated Maturity Greater than One Year that Pays Interest At Least Annually

For time accounts with a stated maturity greater than one year that do not compound interest on an annual or more frequent basis, **and that require the consumer to withdraw interest at least annually**, the APY may be disclosed as equal to the interest rate. However, if such time accounts do not require the payout of interest at least annually, the APY should be calculated using the regular formula in Regulation DD.

Assume an institution offers a $1,000 two-year CD that does not compound and that pays out interest semi-annually solely by check or transfer. The interest rate is 4%. What APY may be disclosed?

Answer: 4%

Assume the same facts as above, except that interest is not required to be withdrawn until maturity. Use the computer program to calculate the APY to be disclosed.

Answer: 3.92%

Example 5 (continued)   OUTPUT SHEET
** APY PROGRAM ACCOUNT DISCLOSURE/ADVERTISING DOCUMENTATION **

Documentation Date: 11-21-1995
Prepared By:

Name of Institution:

REGULAR ACCOUNT

Daily rate factor:	1/365
Accuracy method for interest rate and amount:	Round
Decimal places for daily interest rate:	15
Decimal places for daily interest amount:	15
Days in year (for APY calculation): 365	
Count February 29 in leap year?	No
Days in deposit term (Compound period = None) :	730

Principal amount of deposit	=	$1,000.00	
Annual interest rate	=	4.0000%	
Total interest	=	$80.00	(Program calculated)
Disclosed APY	=	1.0011%	
APY	=	3.92%	3.92304845413264%

** VIOLATION **   The disclosed APY is understated by 2.92304845413264%

PERIODIC STATEMENTS – APY EARNED AND INTEREST CALCULATIONS

Example 6 – Determination of Collected Balances

Facts/Instructions: When an institution pays interest on collected balances, as opposed to ledger balances, several steps may be required to determine the collected balances in order to properly calculate the interest and APYs earned on such accounts.

The first step is to determine the number of days that certain deposits are withheld from the interest calculation process. (Note that some deposits receive immediate credit and are used in the interest calculation process as of the business day of receipt. Examples of these include cash and electronic deposits.) The first source to consult on this matter is the bank's initial Truth in Savings disclosure for the type of account being reviewed, which should denote when interest begins to accrue on noncash deposit items. However, this document may not provide sufficient details to determine collected balances upon which interest is calculated, and a copy of the institution's internal "float schedule" will need to be obtained. This document should show the number of days of float assigned to deposit items, **typically based upon the items' routing numbers**. Using such a schedule, collected balances can be computed for a periodic statement and input into the program to determine the interest and APY earned.

The second step is to obtain information about the components of the deposits shown on the periodic statement. This is most readily determined through a review of the institution's microfilmed work (or other records of deposit activity). This review should include deposit tickets for the statement period (to determine the nature of the deposited items such as cash, checks, or a combination) and the individual checks/drafts deposited (to determine the number of days of float to assign to the individual items). **Be advised that certain deposits made near the end of a <u>preceding</u> periodic statement cycle can affect the collected balance for the following statement period.**

Determine the collected daily balances and the collected average daily balance for the periodic statement shown on the following page. Assume no deposits were made during the previous statement period. Business days are Monday through Friday.

PERIODIC STATEMENTS – APY EARNED AND INTEREST CALCULATIONS (continued)

Example 6 – Determination of Collected Balances (continued)

ABC BANK
Customer John Doe
Account #123
Statement Period: 3/01/95 - 3/31/95

Date	Transaction	Amount	Ledger Balance
3/01	Deposit	$1,000	$1,000
3/15	Check	(500)	500
3/20	Deposit	3,000	3,500
3/31			3,500

Information from the review of deposit tickets and deposit items:
3/01 $1,000 cash
3/20 $1,000 cash, $1,000 local check, and $1,000 non-local check

Institution's float schedule for interest calculation purposes: Interest begins to accrue on the first business day following the day of deposit for local items and on the second business day following the day of deposit for non-local items.

Answers: Collected Daily Balances

3/01-14	$1,000
3/15-19	500
3/20	1,500
3/21	2,500
3/22-31	3,500

Collected Average Daily Balance for period $1,790.32

PERIODIC STATEMENTS – APY EARNED AND INTEREST CALCULATIONS (continued)

Example 7 – Interest and APY Earned based upon Ledger Balance

Facts/Instructions: Using the periodic statement from example 6, calculate the interest and APY earned for the statement period based upon ledger balances. Assume that the daily balance method is used to calculate interest at a fixed rate of 5%, with daily compounding and no minimum balance requirement.

Input Procedures:

At main menu select the Statement APY option. Skip the next screen

Select "D" for daily compounding and "F" for type of account (fixed-rate). Accept all other defaults on this screen

Enter all required information on the present screen

--   Input a number of "1" or greater for the disclosed APY

--   Enter "Y" for Ledger=Collected.

When "Y" (for yes) is entered at this prompt, the program uses ledger balances to calculate the interest. Note that the program automatically inserts "Y" at the next item (Ledger ADB). This occurs because the ledger ADB must be used for calculation of the APY earned when interest is calculated using ledger balances.

--   Use the calendar to determine the number of days in the period.

NOTE: When using the calendar to determine the number of days in the period, the figure comes up short by one day when the actual beginning and ending dates of the statement cycle are entered by the program user. Be sure to adjust for this problem when using the calendar.

--   Compute the average daily balance by entering "0" at this section, followed by the data requested

Output: APY earned 5.12%; Interest $8.02; Average Daily Balance $1,887.10

Example 7 (continued)   OUTPUT SHEET
                    ** APY PROGRAM PERIODIC STATEMENT DOCUMENTATION **

Documentation Date: 11-15-1995
Prepared By:

Name of Institution:
Name of Depositor:
Account Number:

FIXED-RATE ACCOUNT

Daily rate factor: 1/365
Type of compounding: Days
Number of days in compounding period: 1
Accuracy method for interest rate and amount: Round
    Decimal places for daily interest rate: 15
    Decimal places for daily interest amount: 15
Days in year (for APY calculation):   365
Count February 29 in leap year?   No
Interest calculation method: Daily balance method
Minimum average daily balance: 0
Minimum daily balance: 0
Ledger period = collected balance period: Yes
APY calculated using ledger ADB: Yes
Days in period (ledger balances):   31
Days in period (collected balances):   Not used

....

Average daily balance: = $1,887.10
Annual interest rate: =   5.00000
Total interest: = $8.02   (Program calculated)

Disclosed APY: =   1.00%
APY: =   5.12%   5.12008737752775%

** VIOLATION **   The disclosed APY is understated by 4.12008737752775%

....

PERIODIC STATEMENTS – APY EARNED AND INTEREST CALCULATIONS (continued)

Example 8 – Interest and APY Earned based upon Collected Balance

Facts/Instructions: Using the periodic statement from example 6, calculate the interest and APY earned for the statement period based upon collected balances. Assume that the daily balance method is used to calculate interest at a fixed rate of 5%, with daily compounding and no minimum balance requirement.

Input Procedures:

> At main menu select the Statement APY option. Skip the next screen
>
> Select "D" for daily compounding and "F" for type of account (fixed-rate). Accept all other defaults on this screen
>
> Enter all required information on the present screen
>
> --   Input a number of "1" or greater for the <u>disclosed</u> APY
>
> --   Enter "N" for Ledger=Collected and "N" for Ledger ADB
>
> --   Compute the average daily balance by entering "0" at this section, followed by the data requested

Output: APY earned 5.12%; Interest $7.61; Average Daily Balance $1.790.32

Example 8 (continued)   OUTPUT SHEET
                          ** APY PROGRAM PERIODIC STATEMENT DOCUMENTATION **

Documentation Date: 11-15-1995
Prepared By:

Name of Institution:
Name of Depositor:
Account Number:

FIXED-RATE ACCOUNT

Daily rate factor:		1/365
Type of compounding:		Days
Number of days in compounding period:	1	
Accuracy method for interest rate and amount:		Round
Decimal places for daily interest rate:	15	
Decimal places for daily interest amount:		15
Days in year (for APY calculation):		365
Count February 29 in leap year?	No	
Interest calculation method:		Daily balance method
Minimum average daily balance:	0	
Minimum daily balance:	0	
Ledger period = collected balance period:	No	
APY calculated using ledger ADB:		No
Days in period (ledger balances):	Not used	
Days in period (collected balances):		31

- -

Average daily balance   = $1,790.32
Annual interest rate   =   5.0000%
Total interest   = $7.61   (Program calculated)

Disclosed APY   =   1.00%
APY   =   5.12%   (5.12098645610417%)

** VIOLATION **   The disclosed APY is understated by 4.12098645610417%

- -

PERIODIC STATEMENTS – APY EARNED AND INTEREST CALCULATIONS (continued)

Example 9 – Interest based upon Collected Balance and APY Earned based upon Ledger Balance

Facts/Instructions: Using the periodic statement from example 6, calculate the interest based upon collected balances and the APY earned based upon ledger balances. Assume that the daily balance method is used to calculate interest at a fixed rate of 5%, with daily compounding and no minimum balance requirement.

Input Procedures:

> At main menu select the Statement APY option. Skip the next screen
>
> Select "D" for daily compounding and "F" for type of account (fixed-rate). Accept all other defaults on this screen
>
> Enter all required information on the present screen
>
> --   Input a number of "1" or greater for the <u>disclosed</u> APY
>
> --   Enter "N" for Ledger=Collected and "Y" for Ledger ADB
>
> --   Compute the ledger average daily balance by entering "0" at this section, followed by the data requested
>
> --   Compute the collected average daily balance by entering "0" at this section, followed by the data requested
>
> This process will enable the program to calculate the interest earned for the period. While this step will generate a collected average daily balance figure that will not be used in any of the calculations, the program will use the daily balances entered to calculate interest for the period.

Output: APY earned 4.85%; Interest $7.61; Ledger Average Daily Balance $1,887.10

As demonstrated in examples 7 through 9, use of collected balances (versus ledger balances) can notably impact interest and/or APY earned calculations.

Example 9 (continued)   OUTPUT SHEET
                  ** APY PROGRAM PERIODIC STATEMENT DOCUMENTATION **

Documentation Date: 11-15-1995
Prepared By:

Name of Institution:
Name of Depositor:
Account Number:

FIXED-RATE ACCOUNT

Daily rate factor:		1/365
Type of compounding:		Days
Number of days in compounding period:	1	
Accuracy method for interest rate and amount:		Round
Decimal places for daily interest rate:	15	
Decimal places for daily interest amount:		15
Days in year (for APY calculation):		365
Count February 29 in leap year?	No	
Interest calculation method:		Daily balance method
Minimum average daily balance:	0	
Minimum daily balance:	0	
Ledger period = collected balance period:	No	
APY calculated using ledger ADB:		Yes
Days in period (ledger balances):	31	
Days in period (collected balances):		31

....

Average daily balance	=	$1,887.10	
Annual interest rate	=	5.0000%	
Total interest	=	$7.61	(Program calculated)
Disclosed APY	=	1.00%	
APY	=	4.85%	(4.85262793854256%)

** VIOLATION **   The disclosed APY is understated by 3.85262793854256%

....

PERIODIC STATEMENTS – APY EARNED AND INTEREST CALCULATIONS (continued)

Example 10 – Interest Calculated for a Period other than the Statement Period when Average Daily Balance Method is used – See Section 230.6(b)

Facts/Instructions: When the average daily balance method is used to calculate interest for a period other than the statement period, the institution should calculate and disclose the amount of interest and the APY earned **based on that period**, rather than the statement period. In addition, it should disclose the total number of days (or beginning and ending dates) for both the calculation period and the statement period.

Assume an institution calculates interest on the average daily balance for the calendar month and provides periodic statements that cover the period from the 16th of one month to the 15th of the next month. An account has a balance of $2,000 September 1 through 15 and a balance of $1,000 for the remaining 15 days of September, with the ledger and collected balances being equal. The fixed interest rate is 5.27%, with no compounding.

Calculate the interest and APY earned for the month of September. What information should be disclosed on the statement issued for the period September 16 through October 15?

Input Procedures:

> At main menu select the Statement APY option. Skip the next screen

> Select "N" for "none" at the compounding prompt and "F" for type of account (fixed-rate). Accept all other defaults on this screen

> Enter all required information on the next screen

> --   Input a number of "1" or greater for the <u>disclosed</u> APY

> --   Compute the average daily balance by entering "0" at this section, followed by the data requested. The program will now automatically compute the amount of interest earned during the period.

Answers/Output: Interest for month of September $6.50; APY earned 5.40%.

The above figures should be disclosed on the periodic statement issued for the statement cycle of September 16 to October 15, along with two sets of dates, one for the calculation period and one for the statement period.

Example 10 (continued)   OUTPUT SHEET
                ** APY PROGRAM PERIODIC STATEMENT DOCUMENTATION **

Documentation Date: 11-21-1995
Prepared By:

Name of Institution:
Name of Depositor:
Account Number:

FIXED-RATE ACCOUNT

Daily rate factor:		1/365
Type of compounding:		None
Accuracy method for interest rate and amount:		Round
Decimal places for daily interest rate:		15
Decimal places for daily interest amount:	15	
Days in year (for APY calculation):		365
Count February 29 in leap year?	No	
Interest calculation method:		Average daily balance method
Minimum average daily balance:	0	
Minimum daily balance:	0	
Ledger period = collected balance period:	Yes	
APY calculated using ledger ADB:		Yes
Days in period (ledger balances):	30	
Days in period (collected balances):		Not used

....

Average daily balance	=	$1,500.00	
Annual interest rate	=	5.2700%	
Total interest	=	$6.50	(Program calculated)
Disclosed APY	=	1.00%	
APY	=	5.4%	(5.40167266435082%)

** VIOLATION **   The disclosed APY is understated by 4.40167266435082%

....

PERIODIC STATEMENTS – APY EARNED AND INTEREST CALCULATIONS (continued)

Example 11 – Daily Balance Method used and Periodic Statement sent more often than the Period for which Interest is Compounded

Facts/Instructions: When the daily balance method is used to calculate interest and periodic statements are sent more often than the period for which interest is compounded, a special formula should be used to calculate the APY earned. This formula, which is called the **"additional APY formula"** in the program, can only be used when the daily balance method is used to calculate interest.

Assume an institution uses the daily balance method to calculate interest on an account at a rate of 5%, with annual compounding. Ledger balances are used for all calculations, and periodic statements are provided for each monthly cycle. Using a daily balance of $1,000 for the period and a statement cycle of April 1 to April 30, calculate the interest and APY earned for the statement period.

Input Procedures:

At main menu select the Statement APY option. Skip the next screen

Enter the following information on the screen

-- "N" for "none" at the compounding prompt (because there is no compounding **during the statement period**)

-- "365" for number of days in year

-- "Y" for Additional APY formula (Use the F1 key for information on use of this formula.)

-- "365" for number of days in compounding period (Recall that the appendix states that the actual number of days in the **current** compounding period should be entered in this field.)

-- "F" for type of account (fixed-rate)

Enter all required information on the next screen.

-- Input a number of "1" or greater for the <u>disclosed</u> APY

-- Note that the program automatically selects the <u>daily balance</u> interest calculation method

-- Compute the average daily balance by entering "0" at this section, followed by the data requested. The program will now automatically compute the amount of interest earned during the period. Alternatively, $1,000 may be entered in this field, with the manually-calculated interest figure entered at the next prompt.

Answers/Output: Interest $4.11 [($1,000 daily balance x 5%/365) x 30 days in cycle]; APY earned 5.00%

Example 11 (continued)   OUTPUT SHEET
** APY PROGRAM PERIODIC STATEMENT DOCUMENTATION **

Documentation Date: 11-27-1995
Prepared By:

Name of Institution:
Name of Depositor:
Account Number:

FIXED-RATE ACCOUNT

Daily rate factor:		1/365
Type of compounding:		None
Accuracy method for interest rate and amount:		Round
Decimal places for daily interest rate:		15
Decimal places for daily interest amount:	15	
Days in year (for APY calculation):		365
Count February 29 in leap year?	No	
Interest calculation method:		Daily balance method
Minimum average daily balance:	0	
Minimum daily balance:	0	
Ledger period = collected balance period:	Yes	
APY calculated using ledger ADB:		Yes
Days in period (ledger balances):	30	
Days in period (collected balances):		Not used

....

Average daily balance	=	$1,000.00	
Annual interest rate	=	5.0000%	
Total interest	=	$4.11	(Program calculated)
Disclosed APY	=	1.00%	
Additional Formula APY	=	5%	(5.0005%)

VIOLATION   The disclosed APY is understated by 4.0005%

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